REMARKS/ARGUMENTS

Reconsideration of the present patent application is respectfully requested in light of the foregoing amendments and the following remarks, which are responsive to the Official Action mailed March 30, 2005. By this amendment, Claims 1 and 2 have been amended. Claims 3-9 are the original claims which the Examiner has indicated are allowable or would be so if rewritten to include the limitations of the claims from which they depend, and remain in the present case. In the spirit of the present claims and clarification of the present invention, Applicant has additionally added new Claims 10-20.

A petition for a one-month extension of time, together with the associated fee, is filed herewith.

The Examiner has rejected Claims 1 and 2 under 35 U.S.C. § 102(b) as being anticipated by the disclosure in United States Patent No. 4,751,450 to *Lorenz*. Applicant respectfully submits that the amendments to Claims 1 and 2 distinguish the subject matter of these claims from the circuit disclosed in the *Lorenz* patent. Initially, Applicant has amended Claim 1 to further define the "switching device" as a "normally-closed switching device". That is, the switching device is normally closed to connect the auxiliary start capacitor in parallel with the start capacitor, but will be opened by the switch activation circuit when the relay coil driver circuit **72** receives the positive voltage input from the timer/voltage sensor circuit at output **92**, and the relay coil driver circuit **72** energizes the normally-closed switching device or coil. See Applicant's Specification, paragraph [0030].

Applicant submits that the normally-closed switching device is not disclosed by *Lorenz*. Although the Examiner notes that the SCRs **82, 90** in *Lorenz* act as a switching device, Applicant

submits that they do not act as a normally-closed switching device as claimed. In particular, SCRs by their very nature cannot be "normally closed"; rather, no current flows through the SCR until a pulse is applied to the gate of the SCR. Consequently, Applicant submits that the *Lorenz* patent does not disclose the "normally-closed switching device" as described in amended Claim 1. Furthermore, the SCRs as described in the *Lorenz* patent cannot be made to close in a timely fashion due to the filtering capacitor **48**, which requires time to charge and initiate circuit operation. Therefore, they do not provide the desired benefits of the normally-closed switching device as defined and claimed in the present application.

Applicant further wishes to distinguish the switch activation circuit as described in Claim 1 from the LEDs **68**, **70** and the TRIACs **74, 76** described in *Lorenz*. That is, Applicant's switch activation circuit and the driver therefore is generally referred to in the specification as a relay coil and the relay coil driver circuit shown as **72**. This circuit performs multiple functions with a single set of components; namely, this circuit includes a switching current regulator, a relay switching element, and high frequency oscillator. When the relay or switch activation circuit **56** is turned on, a DC voltage is provided to the relay coil driver circuit **72** via resistor **81**. When the voltage on resistor **81** goes positive, the field effect transistor **76** will begin to conduct. The voltage on the bottom end of relay coil **54** begins dropping toward ground potential, and coupling elements **86** and associated resistor force the base of transistor **74** negative ensuring its non-conduction and the continuing flow of current from resistor **81**. See Applicant's specification, paragraphs [0020]-[0021].

When sufficient current is flowing through relay coil **54**, voltage is developed across resistor **90** in proportion to the relay coil current. This voltage coupled through connection **88** causes the transistor **74** to conduct, and the conduction of transistor **74** prevents DC voltage from

reaching the gate terminal of the field effect transistor **76**, thereby shutting the field effect transistor **76** off. This on-off-on-off oscillation continues as long as the relay coil driver circuit **72** receives DC from the timing and voltage sensor circuit **62**. See Applicant's specification, paragraph [0022].

This shows that the average relay current is self-controlled by the selective energizing and the energizing of the switch activation circuit driver **72** that is a part of the control circuit **60**. The average relay current is thus regulated over a wide range of input voltages. The switching nature of this switch activation circuit provides optimum efficiency regardless of input voltage. With the use of an adequately sized relay coil, operation of the switch activation circuit driver remains stable from a few tens of volts to well in access of several hundred volts.

Continuing to review the device defined in Claim 1, the present circuit uses a plurality of rectifiers arranged in a novel combination of both a bridge rectifier circuit and a protection rectifier circuits. The *Lorenz* patent describes the use of a single rectifier in a half-wave configuration. See *Lorenz*, col. 2, lines 40-55. The *Lorenz* rectifying diode **14** is used in conjunction with resistors **46** and **47**, as well as capacitor **48** to provide power to the circuitry. The disadvantage in the *Lorenz* method is that filtering capacitor **48** must obtain a charge before the rest of the circuitry can begin to function. If the filtering capacitor **48** is of a size large enough to provide filtering of the half wave power, then it will have to be so large as to preclude instantaneous circuit operation. Applicant's circuit, however, utilizes the bridge rectifier to route both positive and negative half-cycles to the functional blocks which come into full operation each half-cycle. Thus, *Lorenz* does not teach the use of a bridge rectifier as defined in Claim 1. The Examiner further provides that the cut-in comparator **32** and cut-out comparator **31** of *Lorenz* constitute a switch protection circuit as defined in Claim 1. As previously mentioned, the

Lorenz circuit must be powered up in order for the cited comparators to function. This is impossible due to the time delay of the *Lorenz* filter capacitor **48**. However, Applicant's relay protection circuit is self-protecting. On the initial application of power, the relay activation circuit or relay coil driver circuit **72** is off and the relay contacts are closed and therefore protected. Once the circuit has become energized, the relay contacts are open, and should power be interrupted, the diodes **34** & **36** or **38** & **32** (the conducting diode pair is dependant on the residual charge polarity) will conduct any charge remaining on the start capacitor to the control circuit **60** to keep the relay energized and the contacts open until the hazardous charge has been safely dissipated from the start capacitor and the diodes **34** & **48** or **38** & **50** (the conducting diode pair is dependant on the residual charge polarity) will conduct any charge remaining on the auxiliary start capacitor to the control circuit **60** to keep the relay energized and the contacts open until the hazardous charge has been safely dissipated from the auxiliary start capacitor. Furthermore, Applicant wishes to note that the switch protection rectifier circuit includes at least some diodes that are independent of the bridge rectifier or full wave rectifier, which is not taught by *Lorenz*. In view of these differences, Applicant submits that the switch protection rectifier circuit described in Claim 1 is not anticipated by the *Lorenz* patent.

Finally, Applicant wishes to note that Applicant's circuit teaches several substantial differences and improvements over the circuit described in the *Lorenz* patent. *Lorenz* relies on a stable regulated filtered DC supply voltage developed from the motor's main coil winding and stored in the filter capacitor. The DC supply voltage is subject to variation due to incoming line voltage and the demands on the motor for starting current. Applicant's circuit operates on a cycle by cycle basis and is capable of responding to a half-cycle, full-cycle, asymmetrical and residual DC inputs.

For prior art to anticipate a claimed invention under §102, every element of the claimed invention must be identically disclosed, either expressly or under principals of inherency, in a single reference. Corning Glass Works v. Sumitomo Electric, 9 U.S.P.Q. 2d 1262, 1265 (Fed. Cir. 1989). In view of the arguments provided above, Applicant respectfully submits that *Lorenz* does not anticipate the invention as claimed, and that the application is in condition for allowance. Allowance of this application is earnestly solicited.

If any additional fees are due in connection with the filing of this Amendment or the accompanying papers, such as fees under 37 C.F.R. §§1.16 or 1.17, please charge the fees to SGR Deposit Account No. 02-4300, Order No. 028924.029. If an additional extension of time under 37 C.F.R. §1.136 is necessary that is not accounted for in the papers filed herewith, such an extension is requested. The additional extension fee also should be charged to SGR Deposit Account No. 02-4300, Order No. 028924.029. Any overpayment can be credited to Deposit Account No. 02-4300, Order No. 028924.029.

Respectfully submitted,

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